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Specification and Drawings, as originally filed, with Application for Patent Serial No: **2,433,826**, on June 25, 2003, by **IBM CANADA LIMITED - IBM CANADA LIMITEE,** assignee of Stanislav Bliakhman, Howard Borenstein, Victor S. Chan, Robert M.H. Dunn, Nelson Jean and Lev Mirlas, for "Supplier Proxy Store to Virtulize an External Business Entity".

Sylvie Grégoire
Agent certificateur/Certifying Officer

August 27, 2003
Date

Canada

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ABSTRACT

A commerce site for exchanging commerce information with a plurality of remote store sites and shopper clients over a network, the commerce site including a marketplace store for exchanging information with shopper clients and remote store sites through the network; and a plurality of proxy stores, each proxy store associated with one of the remote store sites for communicating therewith over the network and acting as an intermediary for information exchanged between the associated remote store site and the marketplace store.

SUPPLIER PROXY STORE TO VIRTULIZE AN EXTERNAL BUSINESS ENTITY

BACKGROUND OF THE INVENTION

[0001] The present invention relates to managing information in an electronic commerce system.

[0002] There has been explosive growth in the use of the World Wide Web as a medium for providing information about products and services, and in some cases, permitting on-line ordering and purchasing. However, in many cases it remains difficult for buyers to efficiently receive and compare pricing and other information about the products and services of competing suppliers, and to order products from suppliers and track what has been ordered. In some situations, suppliers use different e-commerce outlets that make comparisons and order tracking cumbersome or difficult. In some situations suppliers are deterred by technical and cost issues from making adequate use of e-commerce.

[0003] Thus, there is a need for an e-commerce solution that efficiently and cost effectively facilitates on-line quoting, ordering, order tracking and inventory tracking in a multi-supplier environment.

SUMMARY OF THE INVENTION

[0004] A supplier proxy store is used at a common electronic marketplace to represent a remote supplier store. According to various aspects of the invention, the proxy store manages data assets of the remote store to support processes of obtaining and displaying quotations, creating orders, submitting orders, tracking orders and/or tracking inventory.

[0005] According one aspect of the invention there is provided a commerce site for exchanging commerce information with a plurality of remote store sites and shopper clients over a network, the commerce site including a marketplace store for exchanging information with shopper clients and remote store sites through the network. The commerce site includes a plurality of proxy stores, each proxy store associated with one of the remote store sites for communicating therewith over the network and acting as an intermediary for information exchanged between the associated remote store site and the marketplace store.

[0006] According to another aspect of the invention, there is provided a method of processing information through a network connected to a marketplace commerce site, a plurality

of remote store sites, and a shopper client, the method including: a) providing at the commerce site a catalog identifying an aggregation of assets available through the remote store sites; a) providing at the commerce site a marketplace store interface through which a shopper at the shopper client can select assets from the catalog; c) providing at the commerce site a plurality of proxy stores, each proxy store representing an associated remote store site; d) generating and storing at the marketplace commerce site, a parent order object that includes a parent list of parent items, each parent item identifying an associated asset selected by the shopper from the catalog; and e) generating first requests at selected proxy stores that are associated with remote store sites specified by the shopper first request, each of the selected proxy stores sending the first request generated thereby to its associated remote store over the network, the first requests each identifying assets identified in the parent list.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

[0008] Figure 1 is a block diagram of a representative system in which the present invention is implemented;

[0009] Figure 2 is a flow diagram of an exemplary process implemented on the system of Figure 1 and the resulting objects;

[0010] Figure 3 is a block diagram representation of an example quotation parent order object of Figure 2;

[0011] Figure 4 is a block diagram representation of an example order quotation relationship object of Figure 2;

[0012] Figure 5 is a flow diagram of an example initial quotation process of Figure 2;

[0013] Figure 6 is a block diagram representation of an example initial quotation object of Figure 2;

[0014] Figure 7 is a block diagram representation of an example selection order object of Figure 2;

[0015] Figure 8 is flow diagram of an example selection order process of Figure 2;

[0016] Figure 9 is a block diagram representation of an example final quotation object of Figure 2;

[0017] Figure 10 is a block diagram representation of an example submission order object of Figure 2;

[0018] Figure 11 is a block diagram representation of an example order record of Figure 2; and

[0019] Figure 12 is a block diagram representation of an example inventory record of Figure 2.

[0020] Similar references are used in different figures to denote similar components, attributes or features.

DESCRIPTION OF SPECIFIC EMBODIMENTS

[0021] The following detailed description of specific embodiments of the present invention does not limit the implementation of the invention to any particular computer programming language. The present invention may be implemented in any computer programming language provided that the operating system provides the facilities to support the requirements of the present invention. In one embodiment, the present invention is implemented, at least partly, in the Java computer programming language. Any limitations presented herein as a result of a particular type of operating system or computer programming language are not intended as limitations of the present invention.

[0022] A representative system 10 in which the present invention is implemented is shown in Figure 1. A marketplace computer system 102 is connected to a communications network 112, which in various example embodiments includes the Internet, an intranet and/or other local or wide area network connections, and combinations of the forgoing. The system 102 hosts a marketplace Website 100. The marketplace 100 is, in an example embodiment, a business-to-business electronic commerce Website in which selected organizations that are granted access to the site are presented with a unified view of assets (for example, products, services and/or intangible assets) that are traded on the site. The marketplace 100 provides hosting services to facilitate the selling, purchasing or exchanging of assets by participating parties. The system 102 may include a single computer a number of computers connected to communicate with each other.

[0023] The system 10 also includes a number of remote supplier computer systems 106 and remote shopper client computer systems 110 that exchange information with the marketplace computer system 102 over the communications network 112. Remote supplier computer systems 106 host remote store commerce sites 104 that communicate with the marketplace 100, and shopper clients 110 have browsers 108 for accessing the marketplace 100.

[0024] The marketplace 100 provides hosting services to remote stores 104 that offer assets for sale in the marketplace catalog 122. The marketplace also includes local stores 128 that offer assets for sale in the marketplace catalog 122, and includes a marketplace store 120 which has access to a browsable marketplace catalog 122. The marketplace catalog 122 is an aggregation of tradable assets, which may be products, services or intangible assets, which are offered for sale by remote stores 104 and local stores 128 through the marketplace 100. In an example embodiment, the same or similar assets are offered by different competing remote stores 104 and local stores 128. The marketplace 100 is configured to communicate with remote stores to support shopping processes including catalog browsing, asset price and availability querying, order taking, order status checking and inventory report generating.

[0025] A shopper using browser 108 can navigate through the marketplace catalog 122, and add assets of interest to a shopping cart, which is an electronic list of tradable assets that a shopper has an interest in and that can be used for inquiring about item price and/or availability. The shopper can request quotations based on the contents of the shopping cart, such that asset price and availability quotations can be obtained from remote stores 104 and local stores 128, allowing shoppers to make purchasing decisions based on factors such as competitiveness of asset pricing and/or product availability. Substitution products can be offered by the remote stores when, for example, the requested asset is not available.

[0026] In example embodiments of the invention, once a shopper has added one or more assets from the marketplace catalog to a shopping cart, they can work their way though obtaining quotations for the products and purchasing them as desired until all assets that are desired in the shopping cart are purchased. In some embodiments, shoppers can keep track of assets and quantities that have been purchased, the remote stores from which they were purchased, order total cost, and fulfillment status.

[0027] Each remote store 104 and local store 128 includes store data assets 114, which include store database assets 116 and store file assets 118. Store database assets 116 include information

for supporting quotation, shopping and administrative activities, including for example: offered asset identification, description and pricing information; information about orders and the status of such orders; and inventory information. Store file assets 118 include Web assets, for example the files used to create Web pages for the remote store or local store, such as HTML files, JSP files, image and graphics files, and text files. In an example embodiment, local stores 128 and remote stores 104 are similarly configured supplier stores, with one notable difference being that the store data assets 114 of remote stores 104 are at least partly hosted and stored at remote supplier computer systems 106, whereas the store data assets of local stores 128 are locally stored and hosted at the marketplace computer system 102. The marketplace store 120 also includes database and file assets as required to carry out its functions.

[0028] According to the present invention, in order to facilitate efficient management and storage of quotations, orders, order status and inventory level data in respect of the remote stores 104 to support an order and quotation process, the marketplace 100 includes proxy stores 124, each of which represents a corresponding remote store 104 or local store 128. The proxy stores 124 act as an intermediary between the marketplace store 120 and remote stores 104 and local stores 128 for quotation requests, order submissions, and other requests. In an example embodiment, the marketplace store 120 exchanges information and commands using a common protocol with all the proxy stores 124, which each communicate with their respective remote or local stores using an appropriate protocol that may be different from the common protocol, and which may vary among the supplier local and remote stores 128,104. Thus, proxy stores 124 allow the marketplace store 124 to use a common format for exchanging quotation and order information with all supplier stores. As will be explained in greater detail below, according to example embodiments of the invention a proxy store 124 is a collection of commands and data configured to maintain and manage its corresponding remote or local store's data assets necessary to support the processes of obtaining and displaying quotations, creating orders by selecting items of interest from quotations, submitting orders, checking the status of submitted orders and generating inventory reports. In one embodiment, the proxy stores 124 are hosted on the same physical computer machine as the marketplace store 120 and the marketplace catalog 122, facilitating sharing of data assets such as the marketplace catalog.

[0029] In an example embodiment, a referral relationship exists between the marketplace store 120 and the proxy stores 124. The referral relationship defines the proxy stores that can be

accessed from the marketplace store to exchange the information with remote stores and local stores required to support the on-line order and quotation shopping process. A configurable relationship object or list 126 is maintained by the marketplace 100 to define the relationships, and the list 126 includes a unique Marketstore ID identifying the Marketplace store 120, and unique proxy store ID's for all the proxy stores 124 participating in the relationship. For each proxy store identified in the list, the list 126 includes an identification of the type of relationship with the marketplace store (such as a referral relationship) and a state flag that enables or disables the relationship.

[0030] Figure 2 shows a flow diagram of an exemplary ordering and quotation process 200 carried out on system 10, according to embodiments of the invention. By way of overview, the process 200 begins with a quotation parent order process 202, during which a shopper selects assets from the marketplace catalog 122 to produce a quotation parent order object 203. During an initial quotation process 204, the parent quotation order object 203 is passed from the marketplace store 120 to specified proxy stores 124, each of which exchanges information with its corresponding remote store 104 or local store 128, and processes returned quote information to prepare an initial quotation order object 205. During a selection order process 206, the buyer selects items from the initial quotation order objects 205, and based on such selections, the specified proxy store 124 prepares a selection order object 207. During a final quotation process 208, based on the selection order object 207, the proxy store 124 consults with its associated remote store 124 or local store128, and prepares a final quotation order object 209. During a final selection order process 206A, the shopper makes selections from the final quotation order object 209, and such selections are used to update the selection order object 207. In a submission order process 210, the final selections are passed by the specified proxy stores 124 to their respective remote stores 104, and a submission order object 211 created. Once submission order processing has occurred, an order tracking process 212 can be called to generate an order status record 213. An inventory report process 212 is also available for generating an inventory report 215 for administrative purposes. In process 200, the quotation parent order object 203 is a parent order object, with each of the subsequent order and quotation objects 205, 207, 209 and 211 being child order objects. In order to track the relationship between the parent and child objects, the marketplace 100 generates an order quotation relationship object 220 which includes a separate object for each child object generated during order quotation process 200.

[0031] An overview having been provided, each of the sub-processes of process 200 and the resulting objects will now be described in greater detail. Quotation parent order process 202 involves the building of the quotation parent order object 203 by the marketplace store 120. The quotation parent order object 203 is in one embodiment, a virtual shopping cart that includes a list of assets selected by the shopper from the marketplace catalog 122. Figure 3 shows some of the attributes of an example quotation parent order object 203, with sample data for explanatory purposes. In the illustrated example, the quotation parent order object 203 includes attributes of:

(1) A unique parent order ID 310 that is assigned by the marketplace store 120 to the specific quotation parent order object 203;

(2) A parent order list 318 of items, including, for each item in the list: (a) a unique order item ID 302, which is a unique identifier for each item entry in the parent order object 203. (b) A unique asset ID 304 identifying the tradable asset that has been selected from the marketplace catalog as an asset for which a quote is sought. The unique asset ID will typically be a SKU number (Stock Keeping Unit ID) that is associated with a product description and other product attributes (for explanatory purposes, truncated product descriptions are shown in Figure 3). (c) A quantity 306 representing the needed quantity of the asset.

[0032] In various embodiments, the list 318 also includes additional information for each item, including, for example, attributes of: asset unit price and currency identifier as stored in the marketplace catalog 122; estimated shipping charges and shipping and other taxes; and/or a shipping address for the asset.

[0033] As noted above, order quotation relationship objects 220 are generated during process 200. The objects 220 include information about the relationship between the parent order object 203 and the child order objects 205, 207, 209 and 211. With reference to Figure 4, in one example embodiment, each order quotation relationship object 220 pertains to a single child object and includes the following attributes: a) Parent order ID 310 identifying the quotation parent order object; b) a unique child ID 402 as assigned by the proxy store 124 to each child object generated by it through the process 200; c) a proxy store ID 404 identifying the proxy store that created the child order; d) an order quotation relationship type ID 314 identifying the type of order or quotation object; e) a contract identifier 408 identifying a contract that defines the relationship between the marketplace and the remote store; f) a display sequence 410 that can be used by a user interface in the marketplace 100 to determine the sequence in which child

objects should be displayed to a shopper; and g) time-out information 412 that can be used by the proxy store 124 to determine when it should stop polling to see if a quotation or submission request has been responded to yet. With respect to contract identifier 408, contracts (which are predetermined rules) are used to define relationships between the marketplace 100 and remote stores 104. Among other things, the contract between the marketplace 100 and a specific remote store 104 defines the format and protocol of exchanges between the marketplace 100 and the specific remote store. For example, in one embodiment, a policy command is invoked in a proxy store in order to send a quotation request to its associated remote store – this policy command is referenced in the contract between the marketplace 100 and the remote store.

[0034] In one embodiment, the order quotation relationship type ID 314 can assume one of the following values: Initial – when the child object is an initial quotation object 205 generated for items in a quotation parent order request object; Selection – when the child object is a selection order object 207 that represents the shopper's specified quantities of items selected from an initial quotation; Final – when the child object is a final quotation object 209 generated for items in the selection order object; and Submission – when the child object is a submission order object 211. In one embodiment, each order quotation process 200 in the marketplace can have one initial quotation object, one selection order object and one final quotation object for each marketplace store-proxy store and contract pair. The process 200 may have multiple submission order objects for each store and contract pair.

[0035] Turning again to quotation parent order process 202, a user interface presented by the marketplace store 120 to the shopper allows the shopper to request that an initial quote be provided for assets that have been added to the quotation parent order object 203. Upon the shopper making such request, the initial quotation order process 204 begins. A flow diagram of an example initial quotation order process 204 is shown in Figure 5. In some embodiments, upon requesting and initial quote, the shopper will be provided with the opportunity to specify from which supplier remote and local supplier stores 104, 128 the shopper would like to receive quotes from. In some embodiments, the valid selection of specified supplier stores may be limited to those that the shopper has been previously authorized to order from. As indicated in step 502 of Figure 5, once the shopper has indicated that an initial quote is wanted and the desired supplier stores specified, the marketplace store 120 passes an initial quotation request to each of the proxy stores 124 (A and B in the example of Figure 5) that are associated with the

specified remote or local stores 104, 120. Each proxy store 124 then processes the initial quotation request as indicated in Figure 5 to build an initial quotation order object 205 for the specific proxy store, examples of which are shown in Figure 6. In the example of Figures 5 and 6 two remote stores 104 are specified as stores from which quotes are sought, with proxy store A 124 being associated with one remote supplier store 104, and proxy store B 124 being associated with the other. The initial quote process 204 is carried out at each of the proxy stores.

[0036] As indicated at step 504, an "Initial" Order Quotation Relationship Object 220 is created by each proxy store for the two new child initial quotation order objects 205 (having child ID's 402 with values of 1002 and 1003, respectively). As indicated in step 506, each proxy store 124 then parses the quotation parent order object 203 for the information required by its respective associated remote stores 104 to provide an initial quote, then formats such information in an appropriate format and sends it over network 112 to its associated remote store 104 (Step 508). In one embodiment, the quotation request information that is sent to each remote store substantially includes the contents of quotation parent order object 203, along with an indication that the quote being requested is an initial quote. In one embodiment the proxy stores 124 and the marketplace store 120 are each hosted on the same commerce instant allowing each to have access to marketplace catalog 122. In some embodiments, the asset ID in the marketplace catalog may not be the same as the ID that is used at the remote store 104 to identify the selected asset, and there may be a need to map the catalog asset ID to the asset ID used at the remote store. Such mapping can be performed by middleware such as CROSSWORLDS™, available from IBM, while transferring the quotation request to the remote store, and receiving a response back from the remote store.

[0037] Once the initial quote request is sent to its associated remote store 104, each proxy store 124 will poll its associated remote store 104 for a reply to the quotation request for the timeout period specified in the time out attribute 412 of the order quotation relationship object 220. Assuming a proxy store 124 receives an initial quotation response from its associated remote store 104 (step 510), the proxy store parses the response to build the initial quotation object 205 (step 512). In one embodiment, the initial quote response received from the remote store is parsed by the proxy store 124 to generate an initial quotation object 205 having an initial quote list 612 with the following attributes for each item in the quote list: (a) the unique asset ID 304; (b) the quantity 602 of the asset that is available for purchase; (c) the price 604 that the asset

is available for purchase at; (d) an estimated availability date 606; and (d) a correlation ID 610 correlating the item in the quotation list 612 to an item in the parent order list 318. Each proxy store also includes in the initial quotation object 205 (step 608) the unique child object identifier 402 for the initial quotation object.

[0038] As can be appreciated from the initial quotation order object 205 (Proxy Store A) of Figure 6, the remote store associated with Proxy Store A has replied with two items in list 512 that share a common correlation ID, and are hence both linked to the same parent order item. In the illustrated example, two items share correlation ID Number 11, as the remote store has indicated in its initial quote response that it can supply 30 of the requested keyboards immediately, and 20 in 30 days, thereby splitting the parent order item into two initial quotation response items. In some embodiments, alternative options for the same asset can be provided as different items in the initial quotation list 512, for example, in one item in the initial quotation list, the asset may be offered at one price for one availability date, and as another item in the list, the asset may be offered at another price for a different availability date. In such case, the items for the same asset will both have the same correlation ID.

[0039] As can be appreciated from Figure 6, the initial quotation list 612 can include asset substitutions (see proxy store A list), wherein the remote store has responded to the initial quote request with a price for an asset that is similar to but not the same as the asset for which a quote was requested. In the illustrated example, the remote store associated with proxy store A has responded with quote information for Brand Y 17" monitors, in place of the requested Brand X 17" monitors. In such case the proxy store A124 recognizes that the asset ID associated with a correlation ID in the initial quotation response is different from the asset ID in the parent quotation order object, and sets an alternate product flag attribute 608 of the associated item in list 612 to indicate the substitution.

[0040] Correlation ID 610 will now be addressed more generally. Correlation IDs 610 are used in each of the child quotation, selection and submission order objects 203, 205, 207, 209, 211 to permit items in the lists of such objects to be linked to corresponding items in the parent order list 318, thus providing mapping between a single parent order list item and corresponding child quotation, selection and submission order list item(s). Such correlation IDs permit mapping between parent order items and substitute quotation items and allow the quantities of required

assets associated with items in the parent order to be reduced once a submission order for such assets has been made.

[0041] In addition to the attributes shown in Figure 6, in an example embodiment the initial quotation object 205 also includes a supplier part number for each asset in the list 612, and supplier data that is opaque to the marketplace 100 and which can be sent to the remote store 104 when a selection order is submitted for processing - for example, supplier data could include a remote store's distribution center identifier.

[0042] Turning again to Figure 2, once the initial quotation object 205 has been finalized, the selection order process 206 begins, during which a selection order object 207 is produced by each participating proxy store 124. The attributes of an example selection order object 207 (Proxy Store A) and selection order object (Proxy Store B) are shown in Figure 7, and an example selection order process 206 shown in Figure 8. As indicated in Figure 8, at the start of the selection order process 206, the shopper is presented by a user interface implemented by the marketplace store 120 with the quote lists 612 of the initial quotation objects 205 for all remote stores (step 802) that have provided bids. In one embodiment, the information is presented to the user in a format similar to that shown in Figure 6, with an interface being provided such that the shopper, using browser 108, can select quote items from each of the displayed quote lists 612, and the number or volume of the asset that they want final quotes on from each supplier store (step 804). Based on such selections, each of the participating proxy stores 124 that are associated with remote stores 104 from which final quotes have been requested on specified items builds a corresponding selection order object 207 (step 806), having, in one example embodiment, the attributes shown in Figure 7. Each selection order object 207 includes a selected items list 702 that represents the items selected by the shopper from the corresponding initial quote list 612. Each item in list 702 corresponds to a tradable asset for which a final quotation from the associated remote store 104 is being sought, and each selected list item includes: (a) the unique asset ID 304; (b) a quantity 704 of the asset that the shopper has indicated that they want a final quote on from the specified remote store; (c) the quoted price 604 of the asset; (d) the projected availability date 606; and (e) the correlation ID 610 linking the child item back to an item in the original parent order list 318. The unique asset ID 304, quoted price 604, availability date 606, and correlation ID 610 will typically be copied from the initial quote list that the items in selected items list 702 have been copied from. In addition to the

attributes shown in Figure 7, the items in selected items list 702 can also include other attributes, such as attributes representative of asset shipping charges, asset shipping taxes, asset taxes, total asset price (quantity X asset unit price), currency, asset shipping addresses and/or the supplier part number and supplier data referred to above. The selection order object 207 also has linked to it a unique child object ID 402 (No.1004 for the selection for proxy store A, and No. 1005 for the selection for proxy store B in the illustrated example). While building the selection order object 207, the proxy stores 124 each create a "selection" order quotation relationship object 220.

[0043] Turning again to Figure 2, after selection order process 206, each proxy store 124 through which a final quote has been requested carries out final quotation process 208 to produce final quotation object 209. Final quotation process 208 is similar to initial quotation process 204, with one notable exception being that further asset substitutions by the remote stores 104 are not permitted. Process 208 begins with each participating proxy store 124 sending a final quote request over network 112 to its corresponding remote store 104. The quote request includes all or some of the information of selection order object 207, along with an type identifier identifying the quote request as a final quote request.

[0044] After sending out a final quote request to its associated remote store 104, each proxy store 124 waits for a final quotation response from its remote store 104. Each remote store builds a final quote response based on the information contained in the final quote request that it receives, and in preparing a final quote response. The final quote response may include different information than the initial quote response - for example, it may include different prices for assets as a result of changes made by the shopper in requested quantity between the initial and final quote requests. Each proxy store will poll its associated remote store for a final quote response for the time set in the order quotation relationship object 220.. Assuming a proxy store 124 receives a reply to the final quote request, it uses the information contained in the reply, along with the information contained in its selection order object 207 and the order quotation relationship objects 220 to prepare the final quotation object 209, an examples of which are shown in Figure 9 for proxy stores A and B of the illustrated example. Each final quotation object 209 includes substantially the same attributes as initial quotation object 205, and includes a final quotation items list 902. As can be appreciated from Figure 9, in the illustrated example, the final quotation object 209 for proxy store A is assigned child object ID No. 1006, and the final quotation object 209 for proxy store B is assigned child object ID No. 1007. "Final"

quotation order quotation relationship objects 220 are created for each final quote process, as shown in Figure 4.

[0045] During final selection order process 207A, a marketplace interface presents the shopper with final quotation lists 902 from each of the final quotation order objects 209, and gives the shopper the opportunity to select items in the final quotation lists 902 for submitting an order. Based on the shopper's selections, each proxy store 124 that previously created a selection order object 207 updates its selection order object 207 accordingly.

[0046] During submission order process 210, upon shopper request, a submission order is sent by a participating proxy store 124 to its associated remote store 104. The submission order includes information from selection list 107 of the selection order object 207, along with an order type identifier identifying the order as a submission order. Each proxy store that submits a submission order builds a submission order object 211. Examples of submission order objects generated by proxy stores A and B are shown in Figure 10. Each submission order object 211 has attributes similar to those of selection order object 207, and includes a submission order list of items 1002, each item in the list setting out, among other things, a tradable asset that the shopper is ordering from the associated remote store, the quantity of the asset ordered, and the pricing of the asset. A unique child object ID 402 is assigned to each submission order object 211, and an associated "submission" order quotation relationship object 220 (see Figure 4) created for each submission order object. In some cases, the shopper is hyper linked to a website at the remote store 104 during the submission order process 210, with steps (such as payment processing) that need to be carried out to complete the shopping process being done at the remote store 104.

[0047] After the submission order has been passed to the remote store, the proxy store 124 may reduce the desired asset quantities in the quotation parent order object 203 to reflect that the shopper has submitted a submission order for such assets.

[0048] As noted above, in an example embodiment, order tracking process 212 can be used to generate order tracking record 213. An order submitted to the remote store 104 for processing will typically be involved in a sequence of fulfillment activities. For example, after payment for the order is authorized, all or a subset of the specified tradable assets can be shipped, and the order billed. An order or part of an order may be cancelled prior to shipping. In one example embodiment, the remote store 104 carries out order tracking process 212 to produce order tracking record 213, which is then sent over network 112 to the proxy store 124 associated with

the remote store. Such process may be carried out periodically by the remote store 104 as a scheduled activity, or upon promoting from the proxy store 124. Figure 11 shows an order tracking record 213 (for items ordered through proxy store A) according to an example embodiment of the invention. The example record 213 includes a general attribute section 260 that contains general attributes for a particular submission order, such as: Submission order child object ID; remote store identifier; general order status; total order asset cost; total order shipping charges; and total order tax charge. The example order tracking record 213 also includes a list 270 of ordered assets, including for each item in the list, the asset ID, quantity ordered, quantity shipped, unit price, and asset order status. Once an order tracking record 213 has been sent to the proxy store, it can be viewed on a marketplace Web page by an authorized shopper using browser 108.

[0049] As noted above, in an example embodiment, inventory reporting process 214 can be used to generate inventory report 215. Inventory reports provide a snapshot view of the current inventory totals held by the remote stores 104. Remote stores 104 can periodically send inventory updates to their proxy stores 124 about the status of their on-hand inventory. Proxy stores can also request inventory status updates from their remote stores. The updates are then used by the proxy stores to generate inventory reports 215.

[0050] With reference to Figure 12, organization of an example inventory report 215 is shown. A first table 280 stores products' most recent inventory levels. A second table 290 shows the history of inventory adjustments obtained from the remote stores 124. For example, inventory record 101 has been updated three times in the year 2002, on January 01, February 01 and March 01. As of March 01, remote store A had 1000 keyboards. From the inventory adjustments record it can be seen that remote store A increased its inventory level for this product by 600 units on March 01. This number represents the difference between the number of keyboards received from the manufacturer and the number of keyboards sold between February 01 and March 01. Thus, on February 01, store A had 400 (1000-600) keyboards. The preceding inventory adjustment record for inventory record 101 indicates that inventory level decreased by 350 units in the month of January. Thus, on January 01, store A had 750 (400+350) keyboards.

[0051] In some embodiments quotes are obtained from and orders placed with local stores 128 through associated proxy stores 124 in a manner similar to that described above in respect of remote stores 104. In some embodiments, shoppers may forgo some or all of the intermediate

processes 104, 206 and 208. For example, in one embodiment, the shopper is given an option to place a submission order directly from the quotation parent order object, without going through the intervening initial quote, selection, and final quote order processes. In some embodiment, additional processes may be performed, for example to shopper may want to go through the initial quotation process 205 a number of times.

[0052] The present invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. Certain adaptations and modifications of the invention will be obvious to those skilled in the art. Therefore, the above discussed embodiments are considered to be illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

WHAT IS CLAIMED IS:

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A commerce site for exchanging commerce information with a plurality of remote store sites and shopper clients over a network, the commerce site comprising:

a marketplace store for exchanging information with shopper clients and remote store sites through the network; and

a plurality of proxy stores, each proxy store associated with one of the remote store sites for communicating therewith over the network and acting as an intermediary for information exchanged between the associated remote store site and the marketplace store.

2. The commerce site of claim 1 including:

a stored catalog identifying an aggregation of assets offered through a plurality of remote store sites connected to the network; wherein

the marketplace store has access to the catalog for creating a parent list identifying assets selected from the catalog by one of the shopper clients over the network; and

each proxy store is configured for reading the parent list and creating a first request identifying at least some of the assets in the parent list and sending the first request over the network to the remote store site associated therewith.

3. The commerce site of claim 2 wherein each proxy store is configured for (a) receiving an associated initial quote response from its associated remote store site in reply to the first request, the initial quote response identifying at least some of the assets identified in the first request and associated prices, and (b) creating an associated initial quote list identifying the assets and associated prices identified in the initial quote response; the commerce site including an interface for presenting to the shopper client the initial quote lists associated with a plurality of the proxy stores.

4. The commerce site of claim 3 wherein an associated initial quote response can identify substitute assets and associated prices in place of at least some of the assets identified in the first

request, each proxy store being configured to identify in the initial quote list associated therewith any substitute assets and associated prices identified in the initial quote response received by the proxy store, the commerce site interface permitting a client shopper to select assets and substitute assets from the presented initial quote lists, each proxy store being further configured for (c) creating an associated selection list identifying the assets and substitute assets selected by the client shopper from the initial quote list associated with the proxy store, and (d) sending the associated selection list over network to the remote store associated therewith.

5. The commerce site of claim 4 wherein the marketplace store is configured to assign a unique identifier to each asset listed in the parent list, each proxy store being configured to assign a correlation ID to each asset and substitute asset listed in the initial quote and selection lists thereby correlating the assets listed therein to assets listed in the parent list.

6. The commerce site of claim 3 wherein the parent list includes, for each identified asset, a desired quantity of the asset as selected by the shopper client, the proxy stores including the desired quantities in the first requests associated therewith, the initial quote responses each identifying an available quantity of the assets identified therein, the available quantity being included in the presented initial quote lists, the commerce site interface permitting a client shopper to select assets from the presented initial quote lists and specify an updated desired quantity of the selected assets, each proxy store being further configured for (c) creating an associated selection list identifying the assets selected by the client shopper from the initial quote list associated with the proxy store and the specified updated desired quantity thereof, and (d) sending the associated selection list over network to the remote store associated therewith.

7. The commerce site of claim 6 wherein the initial quote responses include a projected availability date for the assets identified therein and a quantity of the asset available on the availability date.

8. The commerce site of claim 3, the commerce site interface permitting a client shopper to select assets from the presented initial quote lists, each proxy store being further configured for (c) creating an associated selection list identifying the assets selected by the client shopper from

the initial quote list associated with the proxy store, and (d) sending the associated selection list over network to the remote store associated therewith.

9. The commerce site of claim 8, each proxy store further configured for (e) receiving an associated further quote response from its associated remote store site in reply to the selection list, the further quote response identifying the assets identified in the selection list and associated prices, and (f) creating an associated further quote list identifying the assets and associated prices identified in the further quote response; the commerce site interface configured for presenting to the shopper client the further quote lists.

10. The commerce site of claim 9, the commerce site interface permitting a client shopper to select assets from the presented further quote lists, each proxy store being further configured for (g) updating the associated selection list associated therewith to identify the assets selected by the client shopper from the further quote list associated with the proxy store, and (h) sending the updated selection list over network to the remote store associated therewith.

11. The commerce site of claim 2 wherein the marketplace catalog, marketplace store and the proxy stores are all resident on a common computer.

12. The commerce site of claim 2 wherein each proxy store is configured to receive status information from the remote store associated therewith about orders for assets submitted to the remote store associated therewith; the commerce site including an interface for presenting the status information to a requesting shopper client.

13. The commerce site of claim 1 wherein each proxy store is configured for receiving and storing inventory information received from the remote store associated therewith.

14. A method of processing information through a network connected to a marketplace commerce site, a plurality of remote store sites, and a shopper client, the method including:

a) providing at the commerce site a catalog identifying an aggregation of assets available through the remote store sites;

a) providing at the commerce site a marketplace store interface through which a shopper at the shopper client can select assets from the catalog;

c) providing at the commerce site a plurality of proxy stores, each proxy store representing an associated remote store site;

d) generating and storing at the marketplace commerce site, a parent order object that includes a parent list of parent items, each parent item identifying an associated asset selected by the shopper from the catalog;

e) generating first requests at selected proxy stores that are associated with remote store sites specified by the shopper first request, each of the selected proxy stores sending the first request generated thereby to its associated remote store over the network, the first requests each identifying assets identified in the parent list.

15. The method of claim 14 further including:

f) receiving at the proxy stores from the remote store sites associated therewith a first quote response identifying quote prices for at least some of the assets identified in the first requests; and

g) generating at each proxy store receiving a first quote response an associated first child object that includes a list of first quote items, each first quote item including: (i) an asset identifier identifying a quoted asset for which a first quote has been received, (ii) the quote price for the quoted asset, (iii) an available quantity of the quoted asset, and (iv) a correlation ID linking the first quote item to a corresponding one of the parent items.

16. The method of claim 15 further including:

h) presenting through the marketplace commerce site information included in the first child objects generated by the proxy stores and accepting shopper selections of assets identified in the first child objects;

i) generating the proxy stores associated second child objects that each include a list of selected items identifying the assets and a quantity thereof selected by the shopper from the first child object associated with the proxy store; and

j) sending further requests from the proxy stores to the associated remote store sites, the further request from each proxy store including identification of selected assets and the quantity thereof from the associated second child object.

17. The method of claim 14, including:

receiving at proxy stores from the remote store sites associated therewith status information about previous orders for assets made to the associated remote store sites.

18. The method of claim 14, including:

receiving at proxy stores from the remote store sites associated therewith inventory information about assets available through the associated remote store sites, and storing the received inventory information at the marketplace commerce site.

19. A computer program product having a computer-readable medium tangibly embodying computer executable instructions for a marketplace site that communicates with a plurality of remote store sites and a shopper client over a network, the computer executable instructions comprising:

(a) computer executable instructions for implementing a catalog identifying an aggregation of assets available through the remote store sites;

(b) computer executable instructions for implementing a marketplace store interface through which a shopper at the shopper client can select assets from the catalog, the marketplace store interface configured for generating and storing at the marketplace site, a parent order object that includes a parent list of parent items, each parent item identifying an associated asset selected by the shopper from the catalog;

c) computer executable instructions for implementing a plurality of proxy stores, each proxy store representing an associated remote store site; the proxy stores configured for generating associated first requests and sending the generated first requests to the remote store sites associated therewith, the first requests each identifying assets identified in the parent list.

20. A communications signal having modulated thereon computer executable instructions for

a marketplace site that communicates with a plurality of remote store sites and a shopper client over a network, the computer executable instructions comprising:

(a) computer executable instructions for implementing a catalog identifying an aggregation of assets available through the remote store sites;

(b) computer executable instructions for implementing a marketplace store interface through which a shopper at the shopper client can select assets from the catalog, the marketplace store interface configured for generating and storing at the marketplace site, a parent order object that includes a parent list of parent items, each parent item identifying an associated asset selected by the shopper from the catalog;

c) computer executable instructions for implementing a plurality of proxy stores, each proxy store representing an associated remote store commerce site; the proxy stores configured for generating associated first requests and sending the generated first requests to the remote store sites associated therewith, the first requests each identifying assets identified in the parent list.

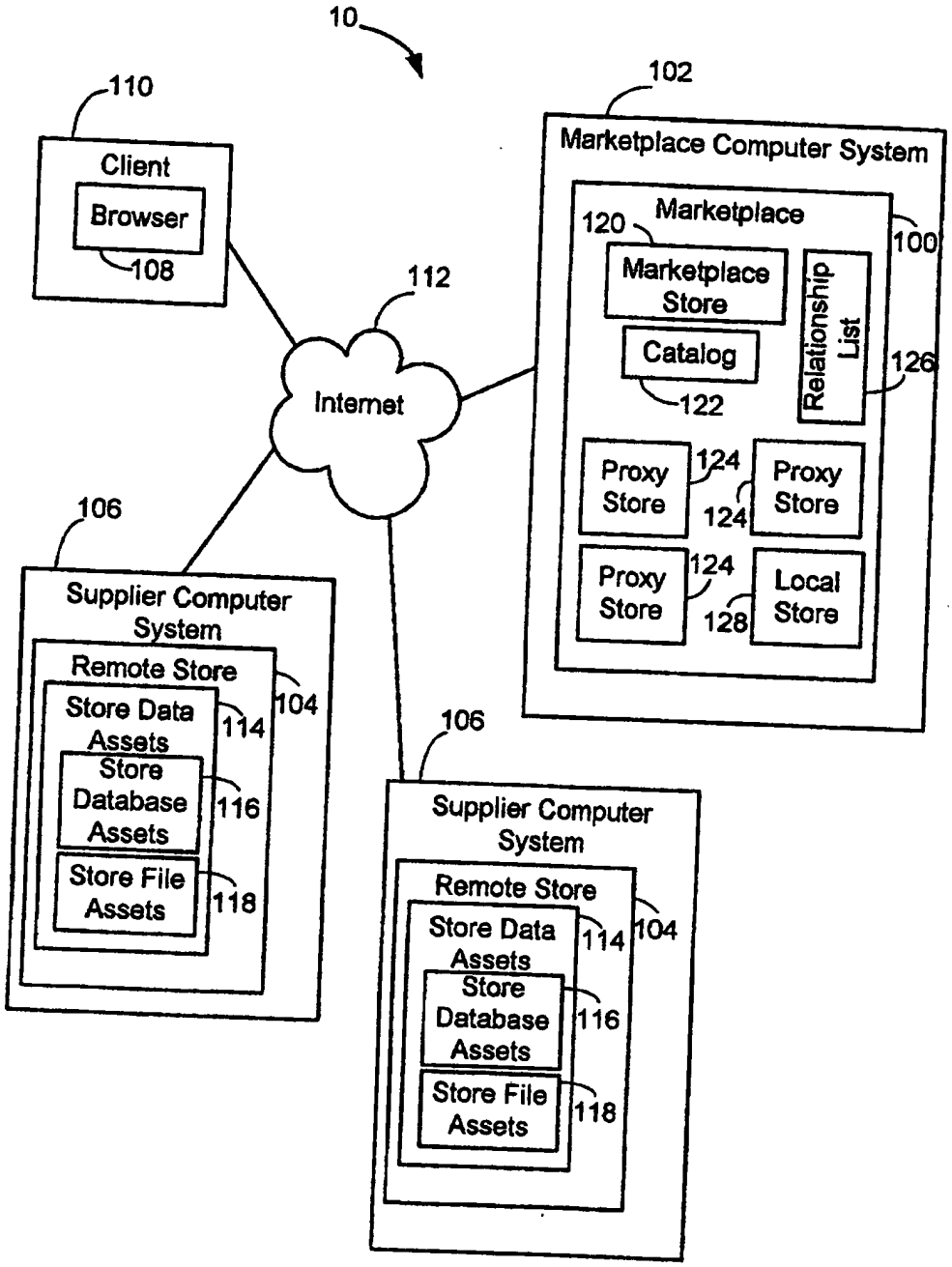
10
110
Client
Browser
108
112
Internet
102
Marketplace Computer System
120
Marketplace
100
Marketplace Store
Catalog
122
Relationship List
126
Proxy Store
124
Proxy Store
124
Proxy Store
124
Local Store
128
106
Supplier Computer System
Remote Store
104
Store Data Assets
114
Store Database Assets
116
Store File Assets
118
106
Supplier Computer System
Remote Store
104
Store Data Assets
114
Store Database Assets
116
Store File Assets
118

FIG. 1

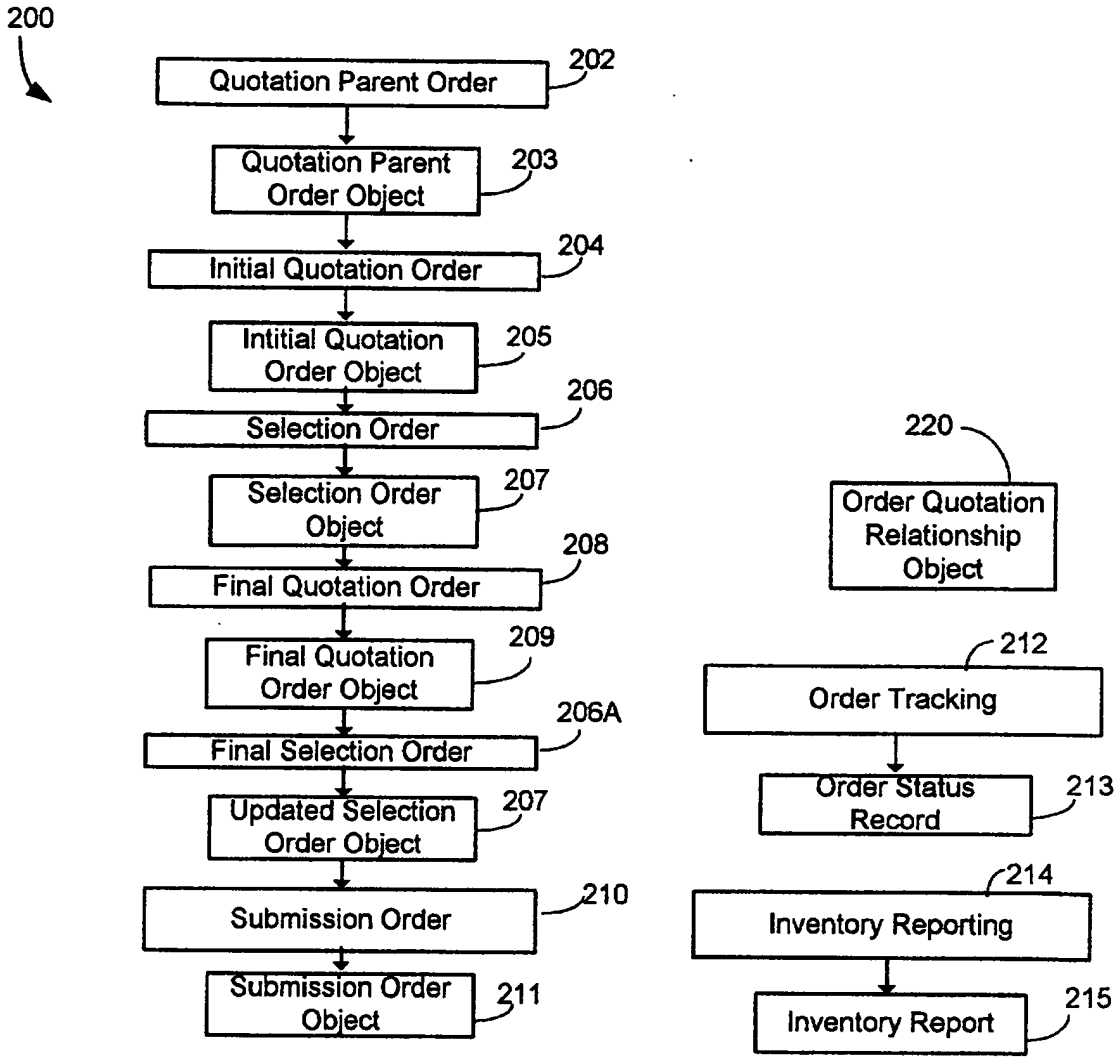

FIG. 2

Quotation Parent Order Object 203

310 **Parent Order ID:** 1001

Parent Item ID 302	Asset ID 304	Quantity 306
10	234 (Computer Mouse)	100
11	238 (Keyboard)	50
12	198 (21" Brand X Monitor)	30
13	199 (17" Brand X Monitor)	20

318

FIG. 3

220

Order Quotation Relationship Objects

Parent 310 Order ID	Child ID 402	Proxy 404 Store ID	Relationship Type ID 314	Contract ID 408	Display Seq. 410	Time-Out 412
1001	1002	A	Initial	ABC-123	1	
1001	1003	B	Initial	DEF-345	2	
1001	1004	A	Selection	ABC-123	1	
1001	1005	B	Selection	DEF-345	2	
1001	1006	A	Final	ABC-123	1	
1001	1007	B	Final	DEF-345	2	
1001	1008	A	Submission	ABC-123	1	
1001	1009	B	Submission	DEF-345	2	

FIG. 4

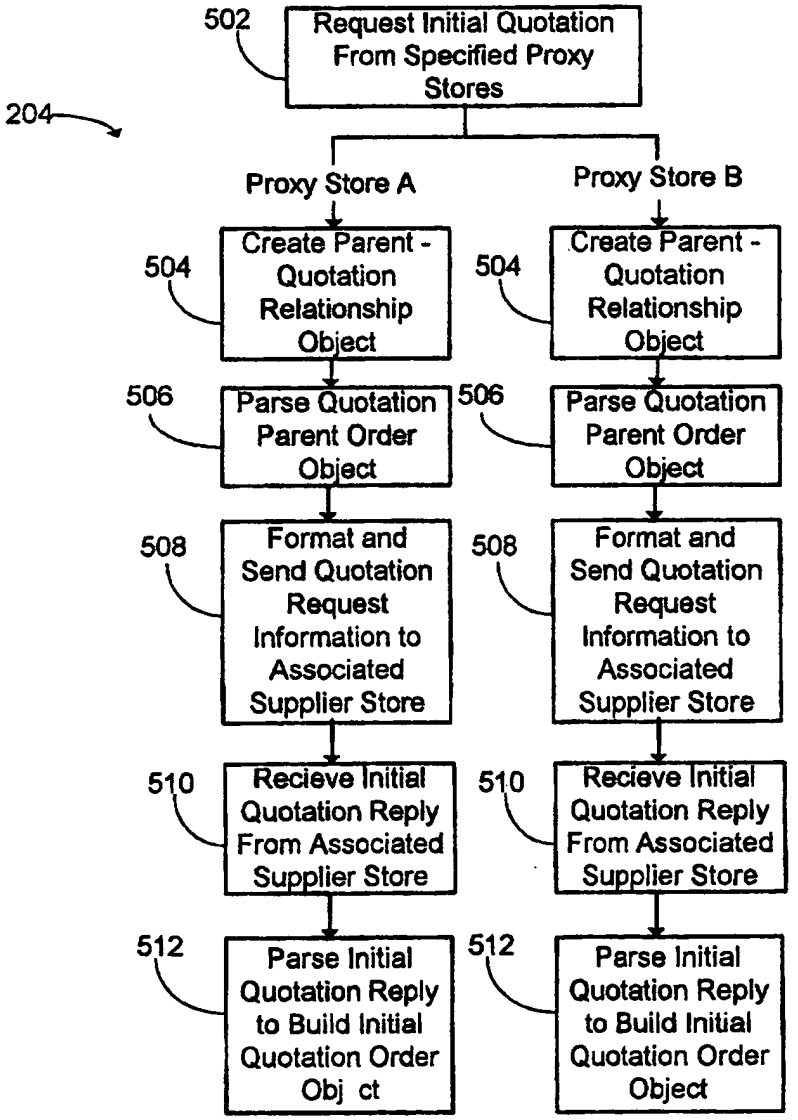

FIG. 5

Initial Quotation Order Object (PROXY STORE A) — 205 (Proxy Store A)

402 **Child Object ID:** 1002

612

Asset ID 304	Quantity 602	Price 604	Availability Date 606	Alternate Product 608	Correlation ID 610
234 (Computer Mouse)	100	9.99	Now	No	10
238 (Keyboard)	30	14.99	Now	No	11
238 (Keyboard)	20	14.99	30 Days	No	11
198 (21" Brand X Monitor)	10	1499.00	Now	No	12
205 (17" Brand Y Monitor)	20	399.00	Now	Yes	13

Initial Quotation Order Object (PROXY STORE B) — 205 (Proxy Store B)

402 **Child Object ID:** 1003

612

Asset ID 304	Quantity 602	Price 604	Availability Date 606	Alternate Product 608	Correlation ID 610
234 (Computer Mouse)	100	10.99	Now	No	10
238 (Keyboard)	10	14.99	Now	No	11
198 (21" Brand X Monitor)	10	1599.00	Now	No	12
205 (17" Brand X Monitor)	20	399.00	Now	No	13

FIG. 6

207 (Proxy Store A)

S l cti n Order Object (Proxy Store A)

402 — **Child Object ID:** 1004

Asset ID 304	**Quantity** 704	**Price** 604	**Availability Date** 606	**Correlation ID** 610
234 (Computer Mouse)	100	9.99	Now	10
238 (Keyboard)	30	14.99	Now	11
198 (21" Brand X Monitor)	10	1499.00	Now	12
205 (17" Brand Y Monitor)	20	399.00	Now	13

702

207 (Proxy Store A)

Selection Order Object (Proxy Store B)

402 — **Child Object ID:** 1005

Asset ID 304	**Quantity** 704	**Price** 604	**Availability Date** 606	**Correlation ID** 610
238 (Keyboard)	10	14.99	Now	11

702

FIG. 7

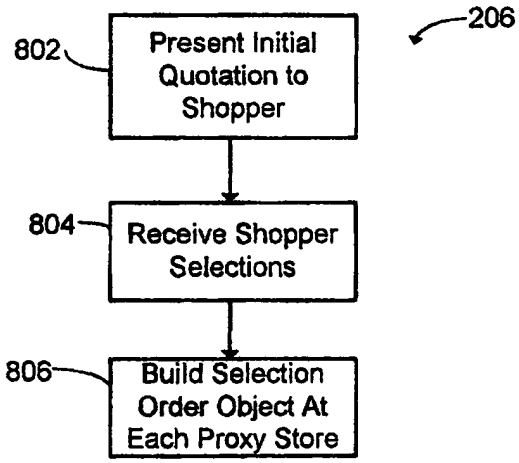

FIG. 8

Final Quotati n Order Obj ct (Proxy St re A) 209 (Proxy Store A)

402 Child Object ID: 1006

Asset ID 304	Quantity 704	Price 604	Availability Date 606	Alternate Product 608	Correlation ID 610
902 234 (Computer Mouse)	100	9.99	Now	No	10
238 (Keyboard)	30	14.99	Now	No	11
198 (21" Brand X Monitor)	10	1499.00	Now	No	12
205 (17" Brand Y Monitor)	20	399.00	Now	No	13

Final Quotation Order Object (Proxy Store B) 209 (Proxy Store B)

402 Child Object ID: 1007

Asset ID 304	Quantity 704	Price 604	Availability Date 606	Alternate Product 608	Correlation ID 610
902 238 (Keyboard)	10	14.99	Now	No	11

FIG. 9

Submission Order Object (Proxy Store A) 211 (Proxy Store A)

402 Child Object ID: 1008

Asset ID 304	Quantity 704	Price 604	Availability Date 606	Correlation ID 610
234 (Computer Mouse)	100	9.99	Now	10
238 (Keyboard)	30	14.99	Now	11
198 (21" Brand X Monitor)	10	1499.00	Now	12
1002 205 (17" Brand Y Monitor)	20	399.00	Now	13

Submission Order Object (Proxy Store B) 211 (Proxy Store B)

402 Child Object ID: 1009

Asset ID 304	Quantity 704	Price 604	Availability Date 606	Correlation ID 610
1002 238 (Keyboard)	10	14.99	Now	11

FIG. 10

213

Order Tracking Record

Order Submission Child Object ID: 1005
Remote Store ID: Store 345
260 **Order Status:** Partially Shipped
Total Order Asset Cost: $24,44870
Shipping Charges: $59.99
Tax Charges: $244.49

Asset ID	Quantity	Price	Status
234 (Computer Mouse)	100	9.99	Shipped
270 238 (Keyboard)	30	14.99	Partially Shipped
198 (21" Brand X Monitor)	10	1499.00	Shipped
205 (17" Brand Y Monitor)	20	399.00	Confirmed

FIG. 11

215

260

Inventory Report

Inventory Record Id	Product	Available Quantity	Proxy Store Id	Last Update Date
101	Keyboard	1000	Proxy Store A	03/01/2002
102	21" SONY monitor	350	Proxy Store B	02/01/2002

270

Inventory Record Id	Adjustment Quantity	Adjustment Date
101	-200	01/01/2002
101	-350	02/01/2002
101	+600	03/01/2002
102	-1000	01/15/2002
102	+500	02/01/2002

FIG. 12